

PATENT SPECIFICATION

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797,771



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COMPLETE SPECIFICATION

Improvements in or relating to Caps for Bottles and like Containers

We, KORK-N-SHAL LIMITED, a British Company, of 8, Leicester Street, London, W.C.2, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to caps for bottles and like containers.

- 10 It has been known to provide bungs made of a flexible material such as polyethylene having a flange seating on the mouth of the bottle which flange is pressed on to the bottle by means of a screw cap that engages threads
- 15 formed externally on the neck of the bottle and is made of a rigid material such as phenol-formaldehyde. Although this provides an effective closure to the bottle it has the disadvantage that the bung remains in the mouth of the bottle after the removal of the screw cap so that the bung must be prised out as a separate operation. Moreover since the bung and cap are unattached there is a tendency for the bung to be lost so that effective resealing of the bottle is no longer possible.

- 20 According to the present invention a closure device comprising a one-piece closure member of elastic material and a one-piece cap of substantially rigid material, said cap having an annular rib engaged in an annular groove in said closure member with freedom of movement whereby the cap can be rotated whilst the closure member is held stationary by engagement in or over the mouth of a bottle onto
- 25 which the closure is placed, but the closure member is removed with the cap when the latter is taken off from the bottle.

- 30 Constructional forms of the invention will now be described by way of the following examples with reference to the accompanying drawings in which:—

- 35 Figure 1 is a sectional view along the axis of one form of closure.

- 40 Figure 2 is a sectional view along the axis of another form, and

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Figure 3 is a similar view of yet another form in which the closure member is substantially a disc covering the mouth of a bottle.

In the construction of the invention shown in Figure 1 the closure comprises a closure member or bung 10 having a sleeve 15 adjusted to fit tightly within the mouth of the bottle the outer surface of the bung being slightly tapered if desired. At the upper end of the sleeve 15 is an outwardly projecting annular flange 16 which seats against the annular under surface of the upper end wall 12 of a cap 11. Above the flange 16 on the bung is a necked portion 13 and above this is a part 14 of a larger diameter than the necked portion 13 but smaller diameter than the flange 16. The cap 11 has a hole 9 in its upper end wall, the outer or top end of the hole being of slightly larger diameter than the inner end so that the outer part fits the parts 14 of the bung and the inner part fits the necked portion 13 of the bung. The inner part may slightly taper with its larger diameter slightly less than the adjacent necked portion within the cap so that the bung and cap may be made separately and the head of the bung can be pushed into position whereupon the part 14 of the bung will snap over the abutment formed by the inner part of the hole in the cap.

In the construction shown in Figure 2 the closure has a bung having a sleeve 17 and a flange 21 but a neck portion 22 is of quite small diameter e.g. a half of the diameter of the sleeve or less and the outer part of the bung is in the form of a knob 19 which may be hollow to provide greater flexibility. A hole 20 in the outer end of a cap 18 is then of frusto-conical shape with its larger diameter inside so that the knob 19 can be pressed from the inside of the cap through the hole, the knob being of larger diameter than the outer edge of the hole so as to seat on the abutment formed by the outer rim of the hole.

In a constructional form of the invention as shown in Figure 3 the closure comprises a

closure member which is substantially formed of a disc 23 whose lower surface 28 is of convex shape so that little if any part of said closure member enters the mouth of a bottle when said closure is in its effective position.

The disc 23 is provided with a necked portion 27 which is about one half the diameter of the disc, said disc having a diameter approximately equal to the diameter of the bottle mouth.

This necked portion 27 on the disc passes through a circular opening in the end wall 29 of the cap part 24 of the closure, the lower part of the opening having a diameter slightly large than that of the necked portion 27. The disc is provided at its upper end with a circular flange 25, the diameter of which is greater than the diameter of the necked portion 27 by about 10% of said latter diameter.

The upper part of the circular opening in the cap has a recessed portion 31 with a diameter slightly larger than the diameter of the flange 25. The upper edge of the flange is chamfered around its entire periphery at 26 giving the flange sufficient resilience to enable the flange to be forced through the opening in the cap so that the flange seats in the recessed portion and thereby joins the disc to the can.

In this manner, as the closure is placed on the mouth of the bottle, the outer peripheral edge of the disc is pressed by the cap against the upper edge of said mouth whilst the remaining convex portion enters the mouth to a distance equal to approximately one half of the thickness of the disc.

In another constructional form of the invention the flange portion of the construction shown in Figure 3 may be replaced by a knob as shown in Figure 2.

When applying one of such closures to a bottle, the closure is moved axially over the mouth of the bottle so as to engage the bung or disc within the mouth and the cap over the rim of the bottle. The cap is then rotated and the bung or disc is brought into frictional engagement with the mouth of the bottle and is held stationary thereby. Further rotation of the cap forces the bung or disc into firm engagement with the mouth and clamps the flange down upon the rim of the bottle.

In a further modification the bung is replaced by a liner i.e. a solid disc which does not enter the mouth of the bottle but seats on the outer rim of the mouth. This is illustrated in Figure 1 but with the sleeve 15 omitted so as to leave the outwardly projecting annular flange 16 as a disc. In this example the lower side of the disc is flat.

The bung or disc may be made of polythene, rubber or any other material having some degree of flexibility and the cap may be made of a synthetic plastics material such as phenolformaldehyde or urea formaldehyde composition or may be made of metal.

What we claim is:—

1. A closure device comprising a one-piece closure member, of elastic material and a one-piece cap of substantially rigid material, said cap having an annular rib engaged in an annular groove in said closure member with freedom of movement whereby the cap can be rotated whilst the closure member is held stationary by engagement in or over the mouth of a bottle onto which the closure is placed, but the closure member is removed with the cap when the latter is taken off from the bottle.

2. A closure as claimed in Claim 1 wherein the closure member is provided with a bung portion for engagement within the mouth of the bottle, an annular flange which seats against an annular under surface of the end wall of said cap, a necked portion between the flange and a part of larger diameter than the necked portion, and the cap is provided with a hole in its end wall, said hole being of slightly larger diameter at its outer end than inner end so that the outer part of the hole fits the part of the larger diameter of the closure member and the inner part of the hole fits the necked portion of the closure member.

3. A closure as claimed in Claim 2 wherein the inner part of the hole is slightly tapered with its larger diameter slightly less than the adjacent necked portion of the closure member in order that the said closure member can be pushed into the cap so that the part of larger diameter of the closure member will snap over the abutment formed by the inner part of the hole in the cap.

4. A closure as claimed in Claim 1 wherein the closure member is provided with a sleeve, an annular flange which seats against an annular under surface of the end wall of said cap, a necked portion between the flange and a knob, and the cap is provided with a hole in its end wall, said hole being of frusto-conical shape with its larger diameter inside so that the knob can be pressed from the inside of the cap through the hole, the knob being of larger diameter than the outer edge of the hole so as to seat on the abutment formed by the outer rim of the hole.

5. A closure as claimed in Claim 4 wherein the knob is hollow to provide greater flexibility.

6. A closure as claimed in any of Claims 2 to 5 wherein the sleeve is slightly tapered in a converging manner towards its lower end.

7. A closure as claimed in Claim 1 wherein the closure member is substantially formed of a disc whose lower surface is of convex shape, and a necked portion between the disc and a circular flange, and the cap is formed with a hole in its end wall, said hole having a recessed portion at its outer end in which said annular flange seats.

8. A closure as claimed in Claim 8 wherein the necked portion is about one half the diameter of the disc, said disc having a diameter approximately equal to the diameter of the

bottle mouth, and said circular flange is chamfered to provide greater resilience to enable the flange to be forced through the hole in the cap, said flange having a diameter which is greater than the diameter of the necked portion by 10% of said latter diameter.

9. A closure as claimed in Claim 1 wherein the closure member is a solid disc which does not enter the mouth but seats on the outer rim of the mouth.

10. A closure as claimed in any of the preceding claims wherein the closure member is made of polythene, rubber or any other

material having some degree of flexibility and the cap is made of a synthetic plastics material such as phenolformaldehyde or urea formaldehyde composition or metal.

11. A closure substantially as hereinbefore described with reference to the accompanying drawings.

For the Applicants:
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PROVISIONAL SPECIFICATION No. 36136. A.D. 1955.

Improvements in or relating to Caps for Bottles and like Containers

We, KORK-N-SEAL LIMITED, a British Company, of 8, Leicester Street, London, W.C.2, do hereby declare this invention to be described in the following statement:—

This invention relates to caps for bottles and like containers.

It has been known to provide bungs made of a flexible material such as polyethylene having a flange seating on the mouth of the bottle which flange is pressed on to the bottle by means of a screw cap that engages threads formed externally on the neck of the bottle and is made of a rigid material such as phenolformaldehyde. Although this provides an effective closure to the bottle it has the disadvantage that the bung remains in the mouth of the bottle after the removal of the screw cap so that the bung must be prised out as a separate operation. Moreover since the bung and cap are unattached there is a tendency for the bung to be lost so that effective resealing of the bottle is no longer possible.

According to the present invention the bung has a part engaged rotatably over an abutment on the cap whereby the cap can be rotated whilst the bung is held stationary by engagement in the mouth of the bottle but the bung is removed with the cap when the latter is taken off from the bottle.

In a construction form of the invention the bung comprises a sleeve adjusted to fit tightly within the mouth of the bottle the outer surface of the bung being slightly tapered if desired. At the upper end of the sleeve is an outwardly projecting annular flange which seats against the annular under surface of the end wall of the cap. Above the flange on the bung is a necked portion and above this is part of larger diameter than the necked portion but smaller diameter than the flange. The cap has a hole in its upper end, the outer or top end of the hole being of slightly larger diameter than the inner end so that the outer part fits the end wall of the bung and the inner part fits the inner portion of the bung. The inner part may

slightly taper with its larger diameter slightly less than the adjacent part within the cap so that the bung and cap may be made separately and the head of the bung can be pushed into position whereupon the end wall of the bung will snap over the abutment formed by the inner part of the hole in the cap.

In another constructional form of the invention the bung has a smaller sleeve and flange but the neck portion is of quite small diameter e.g. a half of the diameter of the sleeve or less and the outer part of the bung is in the form of a knob which may be hollow to provide greater flexibility. The hole in the outer end of the cap is then of frusto-conical shape with its larger diameter inside so that the knob can be pressed from the inside of the cap through the hole the knob being of larger diameter than the outer edge of the hole so as to seat on the abutment formed by the outer rim of the hole. When applying the cap to the bottle it can be moved axially over the mouth of the bottle so as to engage the bung within the mouth and the cap over the rim of the bottle. The cap is then rotated and the bung is brought into frictional engagement with the inner surface of the mouth of the bottle and is held stationary thereby. Further rotation of the cap forces the bung into firm engagement and clamps the flange down upon the rim of the bottle.

In a further modification the bung is replaced by a line i.e. a solid disc which does not enter the mouth of the bottle but seats on the outer rim of the mouth.

The bung may be made of polythene, rubber or any other material having some degree of flexibility and the cap may be made of a synthetic plastics material such as phenolformaldehyde or urea formaldehyde composition or may be made of metal.

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PROVISIONAL SPECIFICATION
No. 34314. A.D. 1956.

Improvements in or relating to Caps for Bottles and
like Containers

We, KORK-N-SEAL LIMITED, a British Company, of 8, Leicester Street, London, W.C.2, do hereby declare this invention to be described in the following statement:—

5 This invention relates to closures for bottles and like containers.

It has been known to provide a closure made of a flexible material such as polyethylene comprising a bung and having a flange seating on the mouth of the bottle, said flange being 10 pressed on to the bottle by means of a screw cap that engages threads formed externally on the neck of the bottle and is made of a rigid material such as phenolformaldehyde. Although 15 this provides an effective closure to the bottle it has the disadvantage that the bung remains in the mouth of the bottle after the removal of the screw cap so that the bung must be prised out as a separate operation. Moreover, 20 since the bung and cap are unattached there is a tendency for the bung to be lost so that effective resealing of the bottle is no longer possible.

According to the present invention the 25 closure comprises a bung, a part of which is engaged rotatably over an abutment on the cap whereby the cap can be rotated whilst the bung is held stationary by engagement in the mouth of the bottle but the bung is removed 30 with the cap when the latter is taken off from the bottle.

In a constructional form of the invention the closure comprises a bung portion which is substantially formed of a disc whose lower surface 35 is of convex shape so that only a small part of said bung is inserted into the mouth of a bottle when said closure is in its effective position.

The disc is provided with a necked portion 40 which is about one half the diameter of the disc, said disc having a diameter approximately equal to the diameter of the bottle mouth.

This necked portion on the disc passes 45 through a circular opening in the cap part of the closure, the lower part of the opening having a diameter slightly larger than that of the necked portion. The necked portion is provided at its upper end with a circular flange, the diameter of which is greater than the diameter of the necked portion by about 10% of 50 said latter diameter.

The upper part of the circular opening in the cap has a recessed portion with a diameter slightly larger than the flange diameter. The upper edge of the flange is chamfered around its entire periphery giving the flange sufficient resilience to enable the flange to be forced 55 through the opening in the cap so that the flange seats in the recessed portion and thereby joins the bung to the cap.

In this manner, as the closure is placed on the mouth of the bottle, the outer peripheral 60 edge of the disc of the bung is pressed by the cap against the upper edge of said mouth whilst the remaining convex portion enters the mouth to a distance equal to approximately 65 one half of the thickness of the disc.

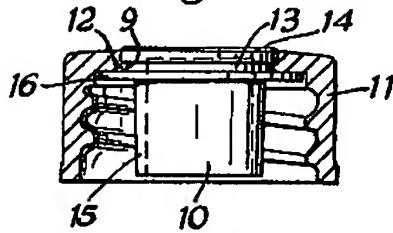
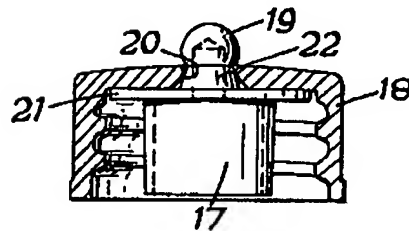
In another constructional form of the invention the upper part of the bung is in the form of a knob which may be hollow to provide 70 greater flexibility. The opening in the upper end of the cap is then of frusto-conical shape with its larger diameter inside so that the knob can be pressed from the inside of the cap 75 through the opening, the knob being of larger diameter than the outer edge of the hole so as to seat on the abutment formed by the outer rim of the hole.

When applying the closure to the bottle it can be moved axially over the mouth of the 80 bottle so as to engage the disc portion against the mouth and the cap over the rim of the bottle. The cap is then rotated and the disc is brought into frictional engagement with the upper edge of the mouth of the bottle and is 85 held stationary thereby. Further rotation of the cap forces the concave portion of the disc into the mouth thereby effecting perfect closing of the bottle.

The bung may be made of polythene, rubber 90 or any other material having some degree of flexibility and the cap may be made of a synthetic plastics material such as phenolformaldehyde or urea formaldehyde composition or may be made of metal.

For the Applicants:
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This drawing is a reproduction of
the Original on a reduced scale.

Fig. 1.*Fig. 2.**Fig. 3.*